IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

BIG WILL ENTERPRISES INC.	
Plaintiff,	**Civil Action File No.: 1:24-cv-00871**
v.	
MATRIX TELEMATICS LIMITED	**JURY TRIAL DEMANDED**
Defendant.	

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Big Will Enterprises Inc. ("BWE" or "Plaintiff") in British Columbia, by and through their undersigned attorneys, files this original Complaint against Matrix Telematics Limited d/b/a Matrix iQ ("Matrix" or "Defendant") and alleges, based on its own knowledge with respect to itself and its own actions and based on information and belief as to all other matters, as follows:

INTRODUCTION

1.

This is an action for patent infringement arising under the patent laws of the United States, Title 35, United States Code to enjoin infringement and obtain damages from Defendant's unauthorized manufacture, use, sale, offer to sell, and/or importation into the United States for the subsequent use or sale of products or methods that infringe one or more claims of United States Patents: 10,521,846 ("the '846 Patent"); 9,049,558 ("the '558 Patent"); 8,737,951 ("the '951 Patent"); 8,559,914 ("the '914 Patent"); and 8,452,273 ("the '273 Patent"). Copies of the '846

Patent, the '558 Patent, the '951 Patent, the '914 Patent and the '273 Patent are attached as Exhibits 1-5.

2.

BWE is an innovative company in the field of sensor technology for determining human activities for health, safety and other uses. BWE's sensor-based technologies go beyond determining simple human locations and offer smartphone users (and other communication-based devices) a personal surveillance system based on their activities. The technologies monitor sensors such as the accelerometer, the gyroscope and others for uniquely identifying human activities; the motion activities can include, for example, but not limited to, standing/stationary, walking, running, driving, skiing, sleeping, snoring, hiking, skateboarding, sky diving, bicycling, unicycling, golfing, falling down, swimming, riding a ski lift, a motor vehicle, a motorcycle, an airplane, a train, or a water vessel, accelerating or decelerating in a motor vehicle, motorcycle, train, airplane, or water vessel, vibrating, propagating through a medium, rotating, riding in a wheelchair, and other human movements, where capturing data and/or providing feedback is desired. BWE has created proprietary technologies in this field of technology since at least 2007 for, among other benefits, the increased health, safety, and wellbeing of its users. BWE's patented technology was developed for use on a wide variety of devices, including smartphones, smartwatches, and other communication and sensor-based devices in use on many popular products in the market today. In addition to licensing, BWE has incorporated its patented technology in its own test platforms for determining human activities, motions within activities, accidents and falls, among others.

3.

A primary inventive concept is method by which a particular human movement can be identified, when the sensors, in this case, those in a mobile phone, have no fixed orientation with respect to the human. A smart phone may be in a user's pocket, purse or backpack, for example and in no particular orientation. U.S. 8,452,273 cols. 1-3. Prior to the '273 Patent, there was no effective answer for this problem. BWE's sensor monitoring, processing and communication technology is covered by the claims of the '846, '558, '951, '914, and the '273 Patents asserted in this action, as well as other BWE patents.

JURISDICTION AND VENUE

4.

BWE is a British Columbia company, incorporated in Canada having its principal place of business at 4573 West 1st Avenue, Vancouver, British Columbia V6R 1H7, Canada.

5.

Upon information and belief, Defendant Matrix Telematics Limited is a Private Limited Company organized under the laws The United Kingdom, having its headquarters at Matrix House, Merlin Court Atlantic Street, Altrincham, Cheshire, WA14 5NL, United Kingdom. Matrix may be served this Complaint by service in accordance with the Convention of 15 November 1965 on the Service Abroad of Judicial and Extrajudicial Documents in Civil or Commercial Matters ("The Hague Service Convention"). Fed. R. Civ. P. 4(h)(2).

6.

This is an action for infringement of a United States patent arising under 35 U.S.C. §§ 271, 281, and 284-285, among others. This Court has subject matter jurisdiction over all causes of action set forth herein pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq.*

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7.

Upon information and belief, Defendant is subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to Defendant's substantial business in this State and judicial district, including: (i) at least a portion of the infringements alleged herein; and/or (ii) regularly doing or soliciting business, engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in Texas and in this district.

8.

On information and belief, Defendant's products and services are offered for sale and sold to customers residing in this State and District. Defendants also provide an online presence under the name MatrixiQ.com which is available to customers and prospective customers within this State and District. As a result of Defendant's business activities in this State and District, on information and belief, Defendants have had continuous and systematic contacts with this State and District, including sales to customers residing in this State and District.

9.

Venue is proper in this judicial district and division pursuant to 28 U.S.C. §1391(c)(3) in that Defendant is not resident in the United States. Venue is appropriate in this judicial district and division pursuant to 28 U.S.C. §1400(b) in that, upon information and belief, Defendant routinely does business within this district, has committed acts of infringement within this district, and continues to commit acts of infringement within this district.

ALLEGATIONS COMMON TO ALL COUNTS

10.

Plaintiff ("BWE") owns all right, title, interest in, and has standing to sue for infringement the following patents: United States Patent No. 10,521,846, entitled "Targeted advertisement

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selection for a wireless communication device (WCD)," issued on December 31, 2019; United States Patent No. 9,049,558, entitled "Systems and methods for determining mobile thing motion activity (MTMA) using sensor data of wireless communication device (WCD) and initiating activity-based actions," issued on June 02, 2015; United States Patent No. 8,737,951, entitled "Interactive personal surveillance and security (IPSS) systems and methods," issued on May 27, 2014; United States Patent No. 8,559,914 entitled "Interactive personal surveillance and security (IPSS) systems and methods," issued on October 15, 2013; and United States Patent No. 8,452,273, entitled "Systems and methods for determining mobile thing motion activity (MTMA) using accelerometer of wireless communication device," issued May 28, 2013.

11.

BWE is a global leader and innovator in the field of sensor technology for determining human activities for health, safety and other uses. These proprietary technologies and innovations were being developed since 2007 for the increased health, safety and wellbeing of its users. BWE patented technology was developed for use on a wide variety of devices, including smartphones and wearables and are in use on many popular products in the market today. In addition to licensing, BWE has incorporated its patented technology in its own test platforms for determining human activities, motions within activities, accidents and falls, among others.

12.

BWE's sensor based technologies go beyond determining human locations by uniquely identifying human activities for automatically monitoring and tracking movements, such as sleep, stationary, walking, running, cycling, falling down, rotating and other human movements where capturing data and/or providing feedback is desired.

13.

BWE's sensor monitoring, processing and communication technologies are covered by the claims of the '846 Patent, '558 Patent, the '951 Patent, the '914 Patent and the '273 Patents which are asserted in this action, as well as other BWE patents.
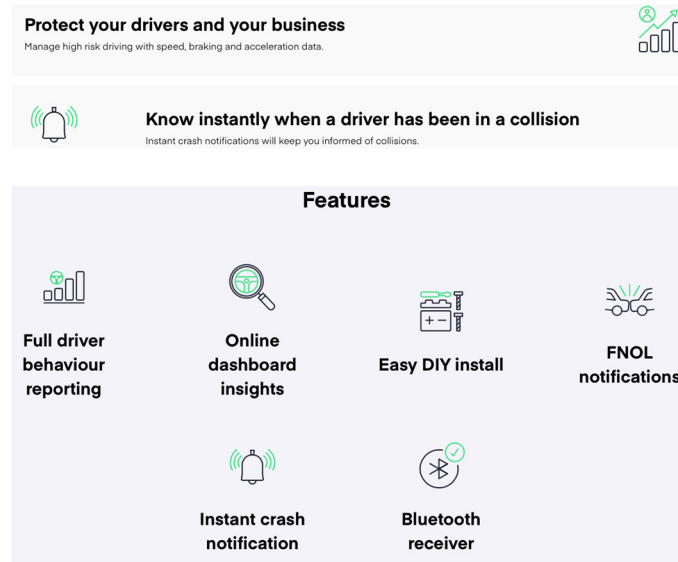
14.

Defendant is a technology company in the business of designing, manufacturing, and supplying on a world-wide basis vehicle telematics systems and fleet management software intended to serve fleet operators. The company offers a plug-and-play tracking device, keyless driver identification solutions, in-vehicle cameras, crash detection, fuel expenditure, tire monitoring and driver risk scoring, enabling clients to receive telematics data in intuitive dashboard displays, automated reports and alerts. Matrix iQ engages in the sale and promotion of infringing technologies in the U.S. market, including in this state and district. In a recent development, Tim Brogan has been appointed as the Executive Vice President of North American Sales of Matrix iQ. Furthermore, Matrix iQ has joined forces with ClearConnect Solutions to offer a range of services, including driver monitoring, Accelerometer and GPS capabilities, crash reporting, and more in the United States, Texas and this district.

15.

Matrix iQ makes, uses, offers for sale, sells and imports its "Nano" self-installed, all-in-one vehicle tracker and its "Tab" plug-in vehicle GPS tracker (hereinafter, simply "telematics system."). Defendant's telematics system the ability to track driver's performance, hard braking and quick acceleration, and collisions. The trackers are high-tech devices equipped with memory, processors, and accelerometer sensors for collecting data and evaluating and reporting various aspects of driving behavior, such as sudden accelerations, aggressive braking, and collisions.
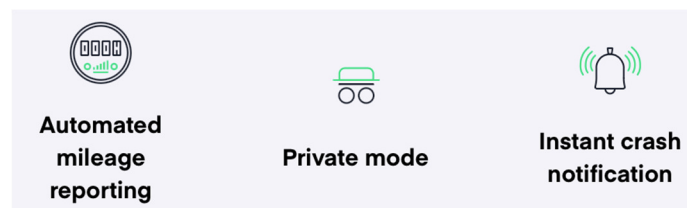
About the Nano - Every fleet manager needs to have a complete view of their fleet and, with the Nano, this is made easy. With the ability to track mileage, location and vehicle status – as well as a driver's performance, with speed, braking and acceleration insights – all the information you need is at your fingertips.

Protect your drivers and your business
Manage high risk driving with speed, braking and acceleration data.

Know instantly when a driver has been in a collision
Instant crash notifications will keep you informed of collisions.

Features

Full driver behaviour reporting

Online dashboard insights

Easy DIY install

FNOL notifications

Instant crash notification

Bluetooth receiver

[https://matrixiq.com/product/nano/.]

About the About the Tab - If you run company cars or grey fleet vehicles, it's essential that you know where they are so you can keep your employees safe and accurately report vehicle mileage. Tab was designed to make this simple, with 60-second journey updates, delivered straight to the online dashboard. This allows you to see where your company vehicles are and to quickly and easily verify mileage claims.

Tab simply plugs in to the 12v power outlet and begins delivering journey data inside a minute. When in business mode, Tab will flash blue, indicating that data is being transmitted. When the Tab flashes green, it is in private mode, ensuring that personal journeys stay personal, by stopping data transmissions.

Automated mileage reporting

Private mode

Instant crash notification

[https://matrixiq.com/product/tab/.]

COUNT I

DIRECT INFRINGEMENT OF THE '846 PATENT

16.

Plaintiff incorporates by reference the allegations of Paragraphs 1-15.
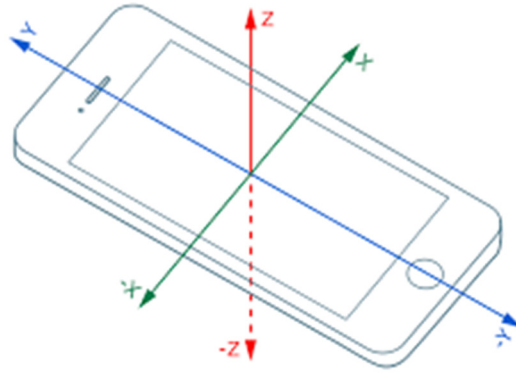
17.

Defendant has directly infringed and continues to directly infringe at least one or more claims of the '846 Patent, through, among other activities, making, using, and incorporating into Defendant's telematics system automatic programs for monitoring human activities while driving.

Independent Claim 1 of the '846 Patent, shown in italics, recites:

> *1. A method for use in connection with a wireless communication device (WCD) transported by a mobile thing (MT), the WCD having a computer architecture that has access to a memory, comprising: determining a mobile thing motion activity (MTMA) associated with the MT that is transporting the WCD based at least in part upon sensor data, the sensor data derived from one or more sensors associated with the WCD,*

The telematics system uses wireless communication tracker devices having accelerometers and gyroscopes for determining human motions and activities. Determination of such human activities may include aggressive or dangerous driving by detecting fast cornering such as quick sharp turns and others via monitoring accelerometer sensor data and/or gyroscope sensor data over time periods.

> *the one or more sensors measuring physical movement of the WCD in three dimensional space and producing data sets comprising three movement values and a time value, each of the three movement values indicative of physical movement of the WCD relative to a respective axis in a three dimensional (3D) coordinate system at the time value in order to permit statistical analysis of the physical movement;*

8

Defendant's telematics system uses wireless communication tracker devices equipped with accelerometers and/or gyroscopes with 3 or more axis sensors for monitoring three-dimensional space(s) for representing the vehicle's movements (such as fast acceleration, hard braking, cornering). The data from the 3-axis accelerometer and/or gyroscope data is measured by using time values for statistical analysis for determining human motions and activities.

> *selecting an advertisement based at least in part upon the determined MTMA; causing the advertisement to be communicated to the WCD; and*

The telematics system monitors driver activities and uses driving statistics including individual scores, with coaching to assist good driving behaviors. These advertisements are part of a complete telematics system to promote better driving and reduce insurance and other costs.

> *wherein the determining the MTMA comprises: storing a plurality of reference MTMA signatures in the memory, each of the MTMA signatures including frequency and/or time information associated with sensor data pertaining to a specific MTMA;*

The process of comparing the reference data with live accelerometer and/or gyroscope data to reference motion activity creates signatures that include frequencies and/or timing for accurately identifying each activity.

> *determining a normalizing mathematical relationship so that different data sets separated in time can be analyzed in the 3D coordinate system; using the normalizing mathematical relationship, determining normalized data sets; analyzing the normalized data sets in the frequency and time domains;*

9

The raw accelerometer data contains gravity accelerations that must be normalized (removing the extra data) for accurately measuring the accelerometer's x, y and z axes. Gravity may also be used for determining the 3D coordinate system's z axis or vertical (and subsequently horizontal) positions for normalizing the live data into sets of orthogonal data so that the frequency and time domains are measuring vertical and horizontal accelerations separately and accurately. Normalizing the live data into sets of data that may be measured in the frequency and time domains allows the live 3D (3 or more axis from the accelerometer and/or gyroscope) data to be compared to the reference data:

Claim 1 concludes:

> *determining likelihoods associated with the stored MTMA signatures based at least in part upon the analyzing; and selecting a most likely MTMA signature from the plurality of MTMA signatures based at least in part upon the likelihoods.*

Based on a range of live data sets and how accurately these data sets match the motion activity referenced data, the motion activity is at least in part determined based on the predetermined likelihoods that are set, the previous identified activity and the possible options within an activity.

18.

Claim 2 of the '846 Patent, for example, recites:

> *2. The method of claim 1, wherein the advertisement is communicated to the WCD via an email or text message.*

On information and belief, the telematics system monitors driver behaviors and uses advertisement notifications and or reward messages, so participants are automatically enrolled to receive messages and or summary emails.

19.

Claim 3 of the '846 Patent, for example, recites:

3. The method of claim 1, further comprising determining an identification (ID) of the MT and wherein the selecting the advertisement is further based at least in part upon the determined ID in addition to the determined MTMA.

On information and belief, Defendant's telematics system receives advertisements promoting

rewards for safe driving scores based on the unique ID of the tracker.

20.

Claim 4 of the '846 Patent, for example, recites:

4. The method of claim 1, further comprising determining a location of the WCD and wherein the selecting the advertisement is further based at least in part upon the location in addition to the determined MTMA.

On information and belief, Defendant's telematics system monitors driver behavior and determines

locations where violations occur (also when drivers finish and or start routes). Notifications and

updated screens that show route and location violations, and driver scores are updated and provided

to fleet managers.

21.

Claim 5 of the '846 Patent, for example, recites:

5. The method of claim 1, further comprising receiving a payment for or otherwise monetarily benefiting from causing the advertisement to be communicated.

On information and belief, the telematics system monitors driver behaviors and uses driver scores

and ranking awards to change and improve driver behaviors.

22.

Claim 6 of the '846 Patent, for example, recites:

6. The method of claim 1, wherein the causing comprises enabling an advertiser to communicate the advertisement to the WCD by advising a remote computer system associated with the advertiser of the MTMA.

11

On information and belief, Defendant uses the telematics system to send predefined advertisements

from a remote computer system that may be configured from time to time.

23.

Claim 7 of the '846 Patent, for example, recites:

> *7. The method of claim 1, further comprising enabling a user of the WCD to enable and disable the causing of the advertisement.*

On information and belief, Defendant's telematics system allow users to choose if messages will

be sent to email.

24.

Claim 8 of the '846 Patent, for example, recites:

> *8. The method of claim 1, wherein the sensor data is derived from an accelerometer, a gyroscope, or both.*

As demonstrated, *supra* with respect to Claim 1, Defendant's telematics system uses sensor data

from the accelerometer and the gyroscope.

25.

Claim 9 of the '846 Patent, for example, recites:

> *9. The method of claim 1, wherein the steps are performed in the WCD itself or in one or more communicatively coupled computer systems that are remote from the WCD and that receive the sensor data from the WCD.*

On information and belief, Defendant's telematics system and program uses the tracker

applications and sensors and also uses servers to make certain decisions that enhance the accuracy

of the data.

26.

Claim 11 of the '846 Patent, for example, recites:

> *11. The method of claim 1, wherein the memory is local and situated within the WCD.*

On information and belief, Defendant's telematics system processes and uses memory for certain events and logging of data, that is separate from connecting to servers for all storage, computing and memory needs/requirements.

COUNT II

DIRECT INFRINGEMENT OF THE '558 PATENT

27.

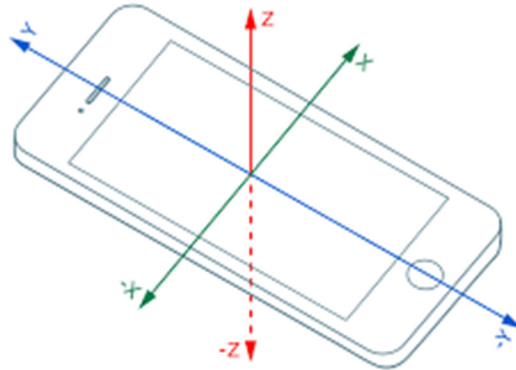Plaintiff incorporates by reference the allegations of Paragraphs 1-15.

28.

Defendant has directly infringed and continues to directly infringe at least one or more claims of the '558 Patent, through, among other activities, making, using, and incorporating into Defendant's telematics system automatic programs for monitoring human activities while driving.

Independent Claim 1 of the '558 Patent, shown in italics, recites:

> *1. A method, comprising: receiving a time value and at least three streams of data sample values from one or more sensors of a wireless communication device (WCD) that is transported by a mobile thing (MT), each data sample value indicative of movement of the WCD at a corresponding time value;*

The telematics system uses wireless communication devices for determining movement of the device that is transported by a vehicle by monitoring linear acceleration and angular velocity sensor data over time periods from the internal accelerometer sensor and/or gyroscope sensors. In particular, three streams of data ("the *x*, *y*, and *z* axis") from each device are measured. The telematics system monitors the accelerometer sensor for linear acceleration and the gyroscope sensor for angular velocity to determine vehicle movement. Accelerometers are sensors which measure acceleration, the change in velocity over time (SI unit: m/s^2). The telematics system code measures acceleration of the vehicle in time-segments, using first, second, et cetera, to confirm multiple time-segment matches to confirm most movement activities.

> *recognizing a particular set of data sample values as a reference for defining an orientation of the WCD in a coordinate system;*

The telematics system uses the accelerometer *x*, *y* and *z* axis data to measure linear acceleration and/or the gyroscope *x*, *y*, and *z* axis data to measure angular velocity to sense and determine the orientation so that driving may be accurately measured. Defining the orientation determines a reference and orientation allows and/or to increase the accuracy of identifying a Motion Activity (MTMA). Defining the ongoing stream of data representing forward momentum and/or gravity the data is measured and used for determining orientation in the coordinate system. In other words, the telematics system uses the accelerometer *x*, *y* and *z* axis to detect the linear acceleration of gravity for determining the orientation of the three-dimensional (3D) coordinate system (accelerometer) so it may accurately measure motion activities.

> *computing reference data based upon the recognition of the particular set, the reference data defining a relationship between each set of subsequent non-reference data sample values and the particular reference set of data sample values in the coordinate system;*

Defendant's telematics system computes reference data and particular sets of non-reference data. Each segment of reference data represents acceleration in an *x*, *y* or *z* axis over a period of time. In particular, the telematics system computes reference data with data sets coming from knowing at least one orientation identified through the acceleration that comes from earth's gravity and the other accelerations that are determined by the user's activity are measured by the accelerometers

x, y or z axis. The telematics system determines when a user is aggressively driving, for example

sharp cornering by measuring sharp cornering reference data to horizontal acceleration in multiple

data sets coming from the x, y, and z axis of the accelerometer when a user is driving.

> *calculating movement data in the coordinate system of one or more other non-reference data sample values based upon the reference data; and*

The telematics system computes movement data including acceleration in x, y and z axes over a

period of time. The telematics system computes reference data and multiple data sets coming from

accelerations that are measured by the accelerometers x, y and z axes over periods of time.

> *determining a mobile thing motion activity (MTMA) associated with the MT based upon the movement data.*

By comparing the telematics system reference data with the accelerometer data, and optionally

GPS data, safe/unsafe styles of driving (e.g., hard braking or fast acceleration) are determined from

the movement data.

29.

Claim 2 of the '558 Patent, for example, recites:

> *2. The method of claim 1, further comprising: prior to recognizing, mathematically combining the data sample values of the particular reference set; and recognizing the particular reference set as the reference when a combined value has a magnitude that is indicative of a relationship to Earth gravity.*

Defendant's telematics system uses the accelerometer x, y and z axis data to determine and

recognize the direction of Earth's gravity. Because the Nano and Tab tracker device movements

are dynamic, *i.e.*, the orientation is not static and therefore an unknown variable, the telematics

system monitors the direction of the Earth's gravity to establish the current orientation of the

device by totaling the three-accelerometer axis (x, y and z) data over short time periods that is

equal to the Earth's gravity (9.807 m/s^2).

15

30.

Claim 3 of the '558 Patent, for example, recites:

> *3. The method of claim 2, further comprising updating the reference data each time the reference set of data samples is recognized.*

On information and belief, the telematics system uses short time periods between 1 and 200ths of a second to recalculate the direction of the Earth's gravity ("9.807"). This provides an updated orientation of the tracker device (multiple times per second).

31.

Claim 4 of the '558 Patent, for example, recites:

> *4. The method of claim 1, wherein: each set of data sample values includes a vector defined by three data sample values x, y, z; the reference data is a rotation matrix M; and the movement data comprises a vertical magnitude along the z axis and a horizontal magnitude along the x, y plane, both derived from a rotated vector, the rotated vector equal to the rotation matrix M multiplied by the vector associated with the other non-reference data sample values x, y, z.*

The telematics system uses the accelerometer *x*, *y* and *z* axis data to determine and recognize the direction of Earth's gravity. After the direction of the Earth's gravity (9.807 m/s^2) is determined, for example, the telematics system first determines the vertical direction, then a second horizontal direction is determined by rotating the vector for measuring forward/backwards acceleration/braking and fast cornering types of vehicle movements through acceleration on a horizontal plane.

32.

Claim 5 of the '558 Patent, for example, recites:

> *5. The method of claim 4, further comprising: transforming the movement data to the frequency domain (FD) to produce FD data; computing one or more FD statistical metrics from the FD data; and wherein the MTMA identifying is based at least in part upon the FD statistical metrics.*

On information and belief, the telematics system processes the accelerometer *x*, *y* and *z* axis data in a frequency domain (FD) to determine at least part of the motion activity. The telematics system uses Fast Fourier Transform (FFT) to convert the accelerometer data to frequency domain from time domain. The frequency domain provides enhanced measurements of *x*, *y* and *z* axis data, including the band power of the signal, the energy (summation of the squared FFT parameters - coefficients), and the magnitude. The telematics system determines the motion activity, at least in part by the mean, maximum and minimum values of accelerometer's *x*, *y* and *z* axis data.

33.

Claim 6 of the '558 Patent, for example, recites:

> *6. The method of claim 5, wherein the MTMA is identified from a set of MTMAs and further comprising: computing a score for each MTMA of the set; and comparing the scores to identify the MTMA.*

On information and belief, the telematics system uses a list of motion activities such as fast acceleration, hard braking, fast/sharp cornering, and when crashes occur.

34.

Claim 7 of the '558 Patent, for example, recites:

> *7. The system of claim 5, wherein the MTMA is identified from a set of MTMAs and wherein the computer program code further comprises: code to compute a score for each MTMA of the set; and code to compare the scores to identify the MTMA.*

On information and belief, the telematics system uses a list of motion activities. Each data set, such as sharp cornering provides a magnitude level (*i.e.,* score) and will be used in determining when a violation/negative event occurs for the driver.

35.

Claim 8 of the '558 Patent, for example, recites:

> *8. The method of claim 1, wherein the MTMA is identified from a set of MTMAs and further comprising: computing a score for each MTMA of the set; and comparing the scores to identify the MTMA*

On information and belief, the telematics system uses a list of motion activities. Each data set, such as sharp cornering provides a magnitude level (*i.e.,* score) and will be used in determining when a violation/negative event occurs for the driver.

36.

Claim 9 of the '558 Patent, for example, recites:

> *9. The method of claim 1, wherein the reference data is in the form of a rotation matrix that normalizes the sets of non-reference data sample values with respect to Earth gravity.*

On information and belief, the telematics system determines driving behaviors such as sharp cornering, fast acceleration, and hard braking by determining and measuring a horizontal motion through a rotation matrix to Earth's gravity.

37.

Claim 10 of the '558 Patent, for example, recites:

> *10. The method of claim 1, wherein the movement data is in the time domain (TD) and wherein the computing comprises: computing a magnitude of the movement data in each of the two dimensions of space; computing one or more TD statistical metrics from the magnitudes; and wherein the MTMA determining is based at least in part upon the TD statistical metrics.*

The telematics system measures acceleration by magnitude and time to determine motion activities such as fast acceleration, hard braking, fast/sharp cornering, and when crashes occur.

38.

Claim 11 of the '558 Patent, for example, recites:

> *11. The method of claim 10, further comprising: transforming the magnitudes from the TD to the frequency domain (FD) to produce FD data; computing one or more FD statistical metrics from the FD data; and wherein the MTMA determining is based at least in part the FD statistical metrics.*

On information and belief, the telematics system processes the accelerometer *x*, *y* and *z* axis data in a frequency domain (FD) to determine at least part of the motion activity. The telematics system uses Fast Fourier Transform to convert the accelerometer data to frequency domain from time domain. The frequency domain provides enhanced measurements of *x*, *y* and *z* axis data, including the band power of the signal, the energy (summation of the squared FFT parameters - coefficients), and the magnitude. The telematics system determines the motion activity, at least in part by the mean, maximum and minimum values of accelerometer's *x*, *y* and *z* axis that come from the tracker's movements.

39.

Claim 12 of the '558 Patent, for example, recites:

> *12. The system of claim 10, wherein the computer program code further comprises: code to transform the magnitudes from the TD to the frequency domain (FD) to produce FD data; code to compute one or more FD statistical metrics from the FD data; and wherein the MTMA determining is based at least in part the FD statistical metrics.*

On information and belief, the telematics system measures acceleration by magnitude and time to determine motion activities such as fast acceleration, hard braking, fast/sharp cornering, and when crashes occur. The frequency domain (FD) may be updated by analysis over time and used to determine the motion activity.

40.

Claim 13 of the '558 Patent, for example, recites:

> *13. The method of claim 1, wherein one or more of the steps of the method is implemented in the WCD, in a computer system that is remote to the WCD, or in a combination of both.*

On information and belief, the telematics system may use servers and other remote computers to implement one or more of the steps to measure, determine and/or rate the acceleration to determine motion activities.

41.

Claim 14 of the '558 Patent, for example, recites:

> *14. The system of claim 1, wherein the MTMA is identified from a set of MTMAs and wherein the computer program code further comprises: code to compute a score for each MTMA of the set; and code to compare the scores to identify the MTMA.*

On information and belief, the telematics system identifies a motion activity by computing a score

related to an activity match, and when close, the activity is determined.

42.

Claim 15 of the '558 Patent, for example, recites:

> *15. The system of claim 1, wherein the reference data is in the form of a rotation matrix that normalizes the sets of non-reference data sample values with respect to Earth gravity.*

The telematics system determines driving behaviors such as sharp cornering, fast acceleration, and

hard braking by determining and measuring a horizontal motion through normalizing the data in a

directional analysis to Earth's gravity.

43.

Claim 16 of the '558 Patent, for example, recites:

> *16. The system of claim 1, wherein the system is implemented in the WCD, in a computer system that is remote to the WCD, or in a combination of both.*

On information and belief, Defendant's telematics system may use servers and other remote

computers to implement one or more of the steps to measure, determine and/or rate the acceleration

to determine motion activities.

44.

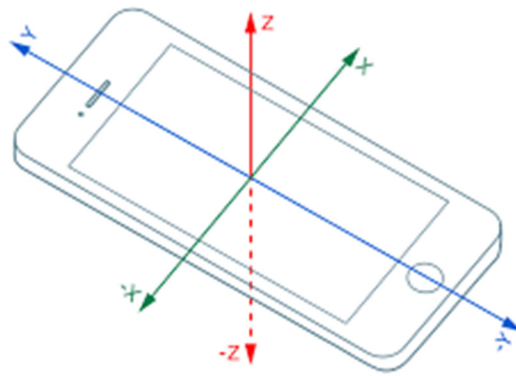Independent Claim 17 of the '558 Patent, shown in italics, recites:

> *17. A method, comprising: receiving first and second data from one or more sensors associated with a wireless communication device (WCD)*

> *transported by a mobile thing (MT), the first and second data indicative of*
> *movement of the WCD;*

Defendant's telematics system uses wireless communication devices for determining motion activities by monitoring linear acceleration and angular velocity sensor data over time periods from the internal accelerometer sensor and/or gyroscope sensor. In particular, the telematics system programs use accelerometer and/or gyroscope sensors for monitoring three streams of data ("the *x*, *y*, and *z* axis") from each device. The telematics system software monitors the accelerometer sensor for linear acceleration and the gyroscope sensor for angular velocity to determine motion activities. Accelerometers are sensors which measure acceleration, the change in velocity of an object over time (SI unit: m/s^2). The telematics system measures acceleration of the tracker in time-segments, using first, second, et cetera, to confirm multiple time-segment matches to confirm most human activities.

Claim 17 continues:

> *determining reference data that defines a reference framework from the first*
> *data;*

The telematics system uses reference accelerometer data for the *x*, *y*, and *z* axes that have been averaged and normalized.

> *normalizing the second data with the reference data so that the second data*
> *can be analyzed in the reference framework; and*

The accelerometer data is normalized by time, by adjusting values or series of data, and/or by combining axis data for processing with reference data. Peak frequencies, time between peaks, rounding, and other processes may be used.

> *identifying a mobile thing motion activity (MTMA) associated with the MT based upon the normalized second data.*

By comparing the telematics system reference data with the accelerometer data, safe/unsafe styles of driving (hard braking/fast acceleration) may be determined from the movement data.

45.

Claim 18 of the '558 Patent, for example, recites:

> *18. The method of claim 17, wherein the second data comprises a plurality of periodic samples.*

On information and belief, Defendant's telematics system uses different sample rates based on the activity, such as whether a vehicle is in motion or not. If a vehicle is not in motion, periodic samples are used to reduce sensor and battery usage.

46.

Claim 19 of the '558 Patent, for example, recites:

> *19. The method of claim 17, wherein the reference data is indicative of a relationship to Earth gravity.*

The telematics system uses the accelerometer *x*, *y* and *z* axis data to determine and recognize the direction of Earth's gravity. Tracker movements are dynamic, therefore the telematics system monitors the direction of the Earth's gravity to establish an orientation of the device by totaling the accelerometer axis data over short time periods that is equal to the Earth's gravity (9.807 m/s^2).

47.

Claim 20 of the '558 Patent, for example, recites:

20. The method of claim 17, wherein the reference data is determined in the form of vector information indicative of a relation to Earth gravity by comparing the first data to a predefined numerical range.

The telematics system uses the accelerometer *x*, *y* and *z* axis data to determine and recognize the direction of Earth's gravity. Because tracker movements are dynamic and its orientation is not a given variable, the telematics system monitors the direction of the Earth's gravity to establish an orientation of the device by totaling the accelerometer axis data over short time periods that is equal to the Earth's gravity (9.807 m/s^2).

48.

Claim 21 of the '558 Patent, for example, recites:

21. The method of claim 20, wherein the one or more sensors produce first, second, and third sample data along each of 3 axes in a three dimensional (3D) coordinate system and wherein the first data pertains to a value that equals one within a predefined range, the value computed by combining the first, second, and third sample data.

The telematics system uses the accelerometer *x*, *y* and *z* axis data to measure linear acceleration and/or the gyroscope *x*, *y*, and *z* axis data to measure angular velocity to sense data over multiple samples to accurately identify the motion activity.

49.

Claim 22 of the '558 Patent, for example, recites:

22. The method of claim 17, wherein the second data is in the time domain (TD) and wherein the identifying comprises: computing magnitudes of the second data in each of the two dimensions of the 2D space; computing one or more TD statistical metrics from the magnitudes; and wherein the MTMA identifying is based at least in part upon the TD statistical metrics.

On information and belief, the telematics system identifies a motion activity (normal driving and dangerous driving, such as sharp cornering) by monitoring and computing the magnitudes of the data in a two-dimension time domain. The telematics system uses Fast Fourier Transform to convert the accelerometer data to frequency domain from time domain. The frequency domain

provides enhanced measurements of *x*, *y* and *z* axis data, including the band power of the signal,

the energy (summation of the squared FFT parameters - coefficients), and the magnitude. The

telematics system determines the motion activity, at least in part by the mean, maximum and

minimum values of accelerometer's *x*, *y* and *z* axis data.

50.

Claim 23 of the '558 Patent, for example, recites:

> *23. The method of claim 22, further comprising: transforming the magnitudes from the TD to the frequency domain (FD) to produce FD data; computing one or more FD statistical metrics from the FD data; and wherein the MTMA identifying is based at least in part the FD statistical metrics.*

On information and belief, Defendant's telematics system measures acceleration by magnitude and

time to determine motion activities. The frequency domain (FD) may be updated by analysis from

the time domain (TD) and used to determine the motion activity. On information and belief, the

telematics system uses statistical metrics that is collected over time, to update motion activity data

for matching.

51.

Claim 24 of the '558 Patent, for example, recites:

> *24. The method of claim 23, wherein the MTMA is identified from a known plurality of MTMAs and further comprising: computing a score for each MTMA of the known plurality; and comparing the scores to identify the MTMA.*

On information and belief, Defendant's telematics system identifies a motion activity (normal

driving and dangerous driving, such as sharp cornering) by computing a score related to an activity

match, and when close the activity is determined.

52.

Claim 25 of the '558 Patent, for example, recites:

25. The method of claim 17, wherein one or more of the steps of the method is implemented in the WCD, in a computer system that is remote to the WCD, or in a combination of both.

On information and belief, Defendant's telematics system may use servers and other remote computers to implement one or more of the steps to measure, determine and/or rate the acceleration to determine motion activities.
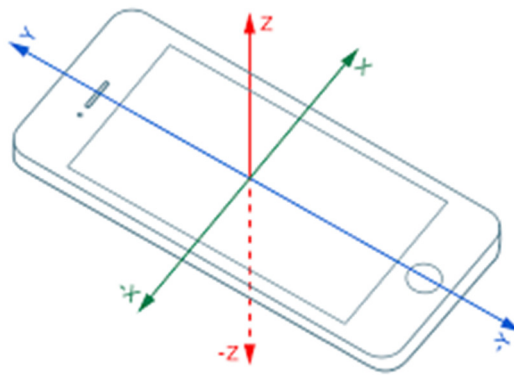
53.

Independent Claim 27 of the '558 Patent, shown in italics, recites:

27. A method for implementation in a wireless communication device (WCD) that is designed to detect a plurality of mobile thing motion activities (MTMAs) associated with a mobile thing (MT), comprising:

Defendant's telematics system uses wireless communication devices for determining motion activities including aggressive and safe driving by monitoring linear acceleration and angular velocity sensor data over time periods from the internal accelerometer sensor and/or gyroscope sensors.

receiving a plurality of data sample values from one or more sensors of the WCD that is transported by the MT, the data sample values indicative of movement of the WCD;

The telematics system collects and processes accelerometer sensor data when the vehicle is in operation.

computing reference data, the reference data defining a relationship between data sample values and a reference framework to enable

> *comparison of data sample values; calculating movement data based upon the reference data and the data sample values; and*

The telematics system computes reference data within a framework (values, size, time, peaks, frequencies, filtering out dominant frequencies, et cetera) with accelerometer data samples that come from wireless communication devices.

> *determining an MTMA associated with the MT based upon the movement data.*

By comparing the telematics system reference data with the accelerometer data, safe/unsafe styles of driving (hard braking/fast acceleration) may be determined from the movement data.

54.

Claim 28 of the '558 Patent, for example, recites:

> *28. The method of claim 27, further comprising: recognizing a particular set of data sample values as a reference for defining an orientation of the WCD in a coordinate system; determining a rotation matrix based upon the particular set of reference data sample values; and calculating the movement data based upon the rotation matrix and one or more sets of the data sample values that are not the particular reference set.*

The telematics system uses the accelerometer x, y and z axis data to determine and recognize the direction of Earth's gravity. After the direction of the Earth's gravity is determined, for example, the telematics system first determines the vertical direction, then a second horizontal direction is determined by rotating the vector for measuring forward/backwards and fast cornering types of vehicle movements through acceleration on a horizontal plane.

55.

Claim 29 of the '558 Patent, for example, recites:

> *29. The method of claim 27, wherein the data sample values are received from a plurality of the sensors.*

The telematics system uses the accelerometer x, y and z axis and the gyroscope x, y, and z axis, magnetometer and/or GPS data samples for determining at least part of the motion activities.

56.

Claim 30 of the '558 Patent, for example, recites:

> *30. The method of claim 29, wherein the plurality of sensors includes at least an accelerometer and a gyroscope.*

The telematics system uses the accelerometer x, y and z axes and/or the gyroscope x, y, and z axes

for determining at least part of the motion activities.

57.

Claim 31 of the '558 Patent, for example, recites:

> *31. The method of claim 30, wherein the plurality of sensors further includes a global positioning system (GPS) receiver.*

The telematics system uses the accelerometer x, y and z axes, the gyroscope x, y, and z axes and/or

the global positioning system (GPS) receiver for determining at least part of the motion activities.

58.

Claim 32 of the '558 Patent, for example, recites:

> *32. The method of claim 27, wherein the MTMA is determined by: computing a score for each MTMA of the plurality; and comparing the scores to identify the MTMA.*

On information and belief, Defendant's telematics system uses a score that matches different

motion activities. The score includes at least the frequency domain and/or the time domain for

multiple data samples.

59.

Claim 33 of the '558 Patent, for example, recites:

> *33. The method of claim 27, wherein the reference data is indicative of a relationship to Earth gravity.*

The telematics system uses reference data to match sensor data that corresponds to Earth's gravity.

60.

Claim 34 of the '558 Patent, for example, recites:

> *34. The method of claim 27, wherein the movement data is in the time domain (TD) and wherein the calculating comprises: computing a magnitude of the movement data in each of at least two dimensions of space; computing one or more TD statistical metrics from the magnitudes; and wherein the MTMA determining is based at least in part upon the TD statistical metrics.*

On information and belief, the telematics system processes the accelerometer x, y and z axis data in a frequency domain (FD) to determine at least part of the motion activity. The telematics system uses the frequency domain to determine the maximum and minimum values of accelerometer's x, y and z axis in a two-dimensional space so a time domain may enhance types of motion activities from the tracker's movements.

61.

Claim 35 of the '558 Patent, for example, recites:

> *35. The method of claim 34, further comprising: transforming the magnitudes from the TD to the frequency domain (FD) to produce FD data; computing one or more FD statistical metrics from the FD data; and wherein the MTMA determining is based at least in part the FD statistical metrics.*

On information and belief, the telematics system further transforms the magnitudes from the time domain to the frequency domain to form frequency domain data. Statistical metrics at least in part determine the motion activity. The telematics system uses Fast Fourier Transform to convert the accelerometer data to frequency domain from time domain. The frequency domain provides enhanced measurements of x, y and z axis data, including the band power of the signal, the energy (summation of the squared FFT parameters - coefficients), and the magnitude. The telematics system determines the motion activity, at least in part by the mean, maximum and minimum values of accelerometer's x, y and z axis data.

62.

Independent Claim 36 of the '558 Patent, shown in italics, recites:

> *36. A system, comprising: one or more memories designed to store computer program code; one or more processors designed to execute the computer program code; and wherein the computer program code comprises:*

Defendant's telematics system includes a memory and processor to store and execute code and manipulate data.

> *code to receive a time value and at least three streams of data sample values from one or more sensors of a wireless communication device (WCD) that is transported by a mobile thing (MT), each data sample value indicative of movement of the WCD at a corresponding time value;*

On information and belief, the telematics system monitors the accelerometer and gyroscope sensors including three streams of data ("the *x*, *y*, and *z* axis") from each device. The telematics system software monitors the accelerometer sensor for linear acceleration and the gyroscope sensor for angular velocity to determine motion activities. Accelerometers are sensors which measure acceleration, the change in velocity over time. The telematics system programs measure acceleration of the user and driver in time-segments, using first, second, et cetera, to confirm multiple time-segment matches to confirm most motion activities.

Claim 36 continues:

> *code to recognize a particular set of data sample values as a reference for defining an orientation of the WCD in a coordinate system;*

Because tracker movements are dynamic and therefore a tracker's orientation is not a given, the telematics system monitors the direction of the Earth's gravity to establish an orientation of the device by totaling the accelerometer axis data over short time periods that is equal to the Earth's gravity (9.807 m/s^2).

> *code to compute reference data based upon the recognition of the particular set, the reference data defining a relationship between each set of*

29

> *subsequent non-reference data sample values and the particular reference set of data sample values in the coordinate system; code to calculate movement data in the coordinate system of one or more other non-reference data sample values based upon the reference data;*

On information and belief, the telematics system computes reference data within a framework (values, size, time, peaks, frequencies, filtering out dominant frequencies, etc.) with accelerometer data samples that come from the wireless communication device, i.e., tracker.

> *and code to determine a mobile thing motion activity (MTMA) associated with the MT based upon the movement data.*

The telematics system determines when excessive acceleration, braking, or cornering occurs or when accidents occur.

63.

Claim 37 of the '558 Patent, for example, recites:

> *37. The system of claim 36, wherein the computer program code further comprises: code to mathematically combine the data sample values of the particular reference set; and code to recognize the particular reference set as the reference when a combined value has a magnitude that is indicative of a relationship to Earth gravity.*

The telematics system uses the accelerometer x, y and z axis data to determine and recognize the direction of Earth's gravity. Tracker movements are dynamic; therefore, the telematics system monitors the direction of the Earth's gravity to establish an orientation of the device by totaling the accelerometer axis data over short time periods that is equal to the Earth's gravity.

64.

Claim 38 of the '558 Patent, for example, recites:

> *38. The system of claim 37, wherein the computer program code further comprises code to update the reference data each time the reference set of data samples is recognized.*

The telematics system automatically updates the orientation and the x, y and z axis data so the vertical and/or horizontal measurements may be made.

65.

Claim 39 of the '558 Patent, for example, recites:

> *39. The system of claim 36, wherein: each set of data sample values includes a vector defined by three data sample values x, y, z; the reference data is a rotation matrix M; and the movement data comprises a vertical magnitude along the z axis and a horizontal magnitude along the x, y plane, both derived from a rotated vector, the rotated vector equal to the rotation matrix M multiplied by the vector associated with the other non-reference data sample values x, y, z.*

On information and belief, the telematics system recalculates accelerometer axis data by adding, subtracting and/or combining accelerometer axis data based on a vertical magnitude and horizontal magnitude so the x, y and z axis data. Compared to horizontal and vertical tracker movements, motion activities may be accurately determined and measured.

66.

Claim 40 of the '558 Patent, for example, recites:

> *40. The system of claim 39, wherein the computer program code further comprises: code to transform the movement data to the frequency domain (FD) to produce FD data; code to compute one or more FD statistical metrics from the FD data; and wherein the MTMA identifying is based at least in part upon the FD statistical metrics.*

On information and belief, the telematics system processes the accelerometer x, y and z axis data in a frequency domain (FD) to determine at least part of the motion activity. The telematics system uses the frequency domain to determine the maximum and minimum values of accelerometer's x, y and z axis in a two-dimensional space so a time domain may enhance types of motion activities from the tracker's movements.

67.

Claim 41 of the '558 Patent, for example, recites:

> *41. The system of claim 36, wherein the movement data is in the time domain (TD) and wherein the code to compute comprises: code to compute a magnitude of the movement data in each of the two dimensions of space;*

31

> *code to compute one or more TD statistical metrics from the magnitudes;*
> *and wherein the MTMA determining is based at least in part upon the TD*
> *statistical metrics.*

On information and belief, the telematics system uses a discrete wavelet transform to convert data to time-frequency domain from time domain. This provides a two-dimensional representation of the power/magnitude of the signal and detailed coefficients through statistical metrics so part of the motion activity may be determined.

68.

Independent Claim 42 of the '558 Patent, shown in italics, recites:

> *42. A system, comprising: one or more memories designed to store*
> *computer program code; one or more processors designed to execute the*
> *computer program code; and wherein the computer program code*
> *comprises:*

The telematics system uses wireless communication devices for determining motion activities including safe and unsafe driving by monitoring linear acceleration and angular velocity sensor data over time periods from the internal accelerometer sensor and/or gyroscope sensor. The telematics system uses native application code, computer memory, and one or more processors.

> *code to receive first and second data from one or more sensors associated*
> *with a wireless communication device (WCD) transported by a mobile thing*
> *(MT), the first and second data indicative of movement of the WCD;*

The telematics system includes code that receives accelerometer data associated with a wireless communication tracker device. The accelerometer data is indicative of the movement of the wireless communication device. The telematics system uses accelerometers for determining motion activities by monitoring linear acceleration and angular velocity sensor data over time periods from the internal accelerometer sensor and/or gyroscope sensor.

> *code to determine reference data that defines a reference framework from*
> *the first data;*

The telematics system includes code that defines how reference data for driving vehicles, hard braking, fast acceleration, and others will be compared to actual movements/acceleration. The telematics system includes code that determines a vertical and/or horizontal framework so the reference data may used in determining when users are driving vehicles, hard braking, fast acceleration, and others.

> *code to normalize the second data with the reference data so that the second data can be analyzed in the reference framework; and*

Data sets from the movements (acceleration) is normalized by values, ranges, frequencies and/or time so as to be compared to reference data. The telematics system code removes the rotational changes to the three-dimensional (3D) coordinate system by normalizing the data with the gravity based determination of the vertical axis.

> *code to identify a mobile thing motion activity (MTMA) associated with the MT based upon the normalized second data.*

The telematics system includes code that identifies motion activity, safe/unsafe styles of driving (hard braking/fast acceleration) based on the normalized data.

69.

Claim 43 of the '558 Patent, for example, recites:

> *43. The system of claim 42, wherein the second data comprises a plurality of periodic samples.*

The telematics system continually compares a plurality of accelerometer and/or gyroscope data samples.

70.

Claim 44 of the '558 Patent, for example, recites:

> *44. The system of claim 42, wherein the reference data is indicative of a relationship to Earth gravity.*

The telematics system uses the earth's gravity to determine how to measure raw data against reference data.

71.

Claim 45 of the '558 Patent, for example, recites:

> *45. The system of claim 42, wherein the reference data is determined in the form of vector information indicative of a relation to Earth gravity by comparing the first data to a predefined numerical range.*

On information and belief, the telematics system uses the earth's gravity to determine a magnitude and direction numbers (vector) for comparing a predefined numerical range.

72.

Claim 46 of the '558 Patent, for example, recites:

> *46. The system of claim 45, wherein the one or more sensors produce first, second, and third sample data along each of 3 axes in a three dimensional (3D) coordinate system and wherein the first data pertains to a value that equals one within a predefined range, the value computed by combining the first, second, and third sample data.*

Accelerometers are sensors which measure acceleration in an *x*, *y* and *z* axis, the change in velocity over time (SI unit: m/s^2). On information and belief, the telematics system programs measure acceleration of the user and driver in time-segments, using first, second, et cetera, to confirm multiple time-segment matches to confirm most motion activities.

73.

Claim 47 of the '558 Patent, for example, recites:

> *47. The system of claim 42, wherein the second data is in the time domain (TD) and wherein the code to identify comprises: code to compute magnitudes of the second data in each of the two dimensions of the 2D space; code to compute one or more TD statistical metrics from the magnitudes; and wherein the MTMA identifying is based at least in part upon the TD statistical metrics.*

On information and belief, the telematics system uses a discrete wavelet transform to convert data

to time-frequency domain from time domain. The telematics system processes the accelerometer

x, *y* and *z* axis data in a two-dimensional space for statistical metrics, including magnitudes of a

motion activity.

74.

Claim 48 of the '558 Patent, for example, recites:

> *48. The system of claim 47, wherein the computer program code further comprises: code to transform the magnitudes from the TD to the frequency domain (FD) to produce FD data; code to compute one or more FD statistical metrics from the FD data; and wherein the MTMA identifying is based at least in part the FD statistical metrics.*

On information and belief, the telematics system uses a discrete wavelet transform to convert data

to time-frequency domain from time domain. This provides a two-dimensional representation of

the power/magnitude of the signal and detailed coefficients through a statistical metrics so part of

the motion activity may be determined.

75.

Claim 49 of the '558 Patent, for example, recites:

> *49. The system of claim 48, wherein the MTMA is identified from a known plurality of MTMAs and wherein the computer program code further comprises: code to compute a score for each MTMA of the known plurality; and code to compare the scores to identify the MTMA.*

The telematics system determines when a user is driving and accelerates too fast and/or brakes too

hard or aggressively corners by assigning a number (score) that identifies motion activity types

(for example, acceptable or unsafe).

76.

Claim 50 of the '558 Patent, for example, recites:

50. The system of claim 42, wherein the system is implemented in the WCD, in a computer system that is remote to the WCD, or in a combination of both.

On information and belief, Defendant's telematics system may communicate with servers and other remote computers to implement one or more of the steps in measuring and determining certain types of motion activities.
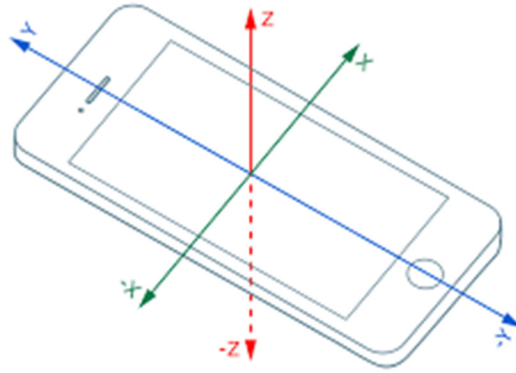
77.

Independent Claim 52 of the '558 Patent, shown in italics, recites:

52. A system for implementation in a wireless communication device (WCD) that is designed to detect a plurality of mobile thing motion activities (MTMAs) associated with a mobile thing (MT), comprising: one or more memories designed to store computer program code; one or more processors designed to execute the computer program code; and wherein the computer program code comprises:

Defendant's telematics system uses wireless communication tracker devices for determining motion activities including safe and aggressive driving behaviors by monitoring linear acceleration and angular velocity sensor data over time periods from the internal accelerometer sensor and/or gyroscope sensor. In particular, the telematics system uses trackers equipped with memories, processors, accelerometers for monitoring linear acceleration and gyroscopes for monitoring angular velocity over time periods.

Claim 52 continues:

code to receive a plurality of data sample values from one or more sensors of the WCD that is transported by the MT, the data sample values indicative of movement of the WCD;

The telematics system includes code to monitor the *x*, *y*, and *z* axis of the accelerometers for measuring linear acceleration and gyroscopes for measuring angular velocity over time periods that are indicative of movement of the wireless communication device.

> *code to compute reference data, the reference data defining a relationship between data sample values and a reference framework to enable comparison of data sample values;*

The telematics system includes code that computes reference data with samples of live data to determine motion activities such as hard braking and aggressive acceleration via activity identifications.   In particular, the telematics system uses code that computes motion activity reference data that includes a numerical integral that derived from the sum of acceleration within a predefined time period.

> *code to calculate movement data based upon the reference data and the data sample values; and*

The telematics system includes code that computes movement data based upon the reference data and samples of live data. The telematics system uses code that computes a numerical integral that's derived from the sum of acceleration within a predefined time period for a data sample value.

> *code to determine an MTMA associated with the MT based upon the movement data.*

The telematics system includes code that identifies a motion activity based on normalized accelerometer and/or gyroscope movement data.

37

78.

Claim 53 of the '558 Patent, for example, recites:

> *53. The system of claim 52, wherein the computer program code further comprises: code to recognize a particular set of data sample values as a reference for defining an orientation of the WCD in a coordinate system; code to determine a rotation matrix based upon the particular set of reference data sample values; and code to calculate the movement data based upon the rotation matrix and one or more sets of the data sample values that are not the particular reference set.*

The telematics system includes computer program code to recognize gravity measurements within the *x*, *y*, and *z* axis that defines an orientation. Code determines and extracts gravitational acceleration so an actual acceleration (without gravity's acceleration) may be accurately measured within data samples.

79.

Claim 54 of the '558 Patent, for example, recites:

> *54. The system of claim 52, wherein the data sample values are received from a plurality of the sensors.*

The telematics system uses data sample values from accelerometer's and/or gyroscope's the *x*, *y* and *z* axis.

80.

Claim 55 of the '558 Patent, for example, recites:

> *55. The system of claim 54, wherein the plurality of sensors include at least an accelerometer and a gyroscope.*

The telematics system uses accelerometers sensors for monitoring linear acceleration and gyroscopes sensors for monitoring angular velocity over time periods for determining motion activities.

81.

Claim 56 of the '558 Patent, for example, recites:

56. The system of claim 55, wherein the plurality of sensors further includes a global positioning system (GPS) receiver.

The telematics system uses the global positioning system (GPS) receiver to determine speed and when users are driving unsafe by exceeding speed limits, and location of accidents.

82.

Claim 57 of the '558 Patent, for example, recites:

57. The system of claim 52, wherein the code to determine the MTMA comprises: code to compute a score for each MTMA of the plurality; and code to compare the scores to identify the MTMA.

On information and belief, the telematics system determines a score from each data sample through a measurement of the time domain and frequency domain. The telematics system uses code that computes motion activity reference data that includes a numerical integral (or range) that is derived from the sum of acceleration within a predefined time period.

83.

Claim 58 of the '558 Patent, for example, recites:

58. The system of claim 52, wherein the reference data is indicative of a relationship to Earth gravity.

The telematics system subtracts earth's gravity influence from the raw accelerometer data so the reference data may accurately represent the motion activity.

84.

Claim 59 of the '558 Patent, for example, recites:

59. The system of claim 52, wherein the movement data is in the time domain (TD) and wherein the code to calculate comprises: code to compute a magnitude of the movement data in each of at least two dimensions of space; code to compute one or more TD statistical metrics from the magnitudes; and wherein the MTMA determining is based at least in part upon the TD statistical metrics.

The telematics system processes raw accelerometer data in the time domain and the code calculates the magnitude of the movement data in at least two dimensions of space; code computes the average magnitude total and/or energy average of the magnitude total to determine at least in part the motion activity.

85.

Claim 60 of the '558 Patent, for example, recites:

> *60. The system of claim 52, wherein the computer program code further comprises: code to transform the magnitudes from the TD to the frequency domain (FD) to produce FD data; code to compute one or more FD statistical metrics from the FD data; and wherein the MTMA determining is based at least in part the FD statistical metrics.*

The telematics system processes raw accelerometer data in the time domain and the code calculates the magnitude of the movement data in the frequency domain to the time domain; the code produces statistical metrics from the frequency domain to determine at least in part the motion activity.

COUNT III

DIRECT INFRINGEMENT OF THE '951 PATENT

86.

Plaintiff incorporates by reference the allegations of Paragraphs 1-15.

87.

Defendant has directly infringed and continues to directly infringe at least one or more claims of the '951 Patent, through, among other activities, making, using, and incorporating into Defendant's telematics system automatic programs for monitoring human activities while driving.

Independent Claim 1 of the '951 Patent, shown in italics, recites:

> *1. A wireless communications device (WCD), comprising: one or more memories that store computer program code; and one or more processors*

> *that execute the computer program code, the computer program code comprising:*

The telematics system uses wireless communication tracker devices for determining human activities including safe and unsafe driving behaviors by monitoring acceleration sensor data over time periods from internal accelerometer sensor and/or gyroscope sensor.

> *instructions to enter a first mode of operation involving a first investigation process with one or more sensors, the first investigation process capturing first data with the one or more sensors;*

The telematics system enters into a first investigation process by monitoring accelerometer data when the user starts driving and automatically detects when driving starts and stops and uses the tracker's sensors to measure the vehicle's driving dynamics.

> *instructions to determine whether or not the first data is indicative of an activity relating to a user need for assistance, an accident, or a crime; and*

The telematics system program monitors the user driving, and constantly monitors for when the user may need assistance, such as to improve driving skills.

> *instructions to, when the first data may involve the activity, enter into a second mode of operation involving a second investigation process that is different than the first investigation process and that involves the one or more sensors and/or one or more other sensors in order to capture second data that is further indicative of the activity.*

On information and belief, when the telematics system program determines the user is driving unsafely, the system will then send captured surveillance information (location, time, driver ID, g-force, and speed) to assist the user to become a better driver and to report unsafe driving to fleet management.

88.

Claim 3 of the '951 Patent, for example, recites:

> *3. The system of claim 1, wherein the computer program code further comprises: instructions to determine a human body physical activity (HBPA) associated with a WCD user based at least in part upon the first*

> *data and/or the second data; and instructions to communicate HBPA*
> *identification information to a remote computer system to permit analysis*
> *in connection with whether or not the first data corresponds to the activity.*

The telematics system monitors the accelerometer and/or gyroscope to monitor *x*, *y* and *z* axis data

in a time domain and/or predefined time length for determining a user activity. The information

is sent to remote servers for additional verification and analysis of the activity.

89.

Claim 4 of the '951 Patent, for example, recites:

> *4. The system of claim 1, wherein the computer program code further*
> *comprises: instructions to communicate the first data to a remote computer*
> *system to permit analysis in connection with whether or not the first data*
> *involves the activity; and receiving information from the remote computer*
> *system, the information indicative of whether or not the first data*
> *corresponds to the activity.*

The telematics system monitors the accelerometer and/or gyroscope to monitor *x*, *y* and *z* axis data

in a time domain and/or predefined time length for determining a user activity. The information

is sent to remote servers and when the user activity is confirmed, the server will combine the unsafe

driver habits and send this updated information (scoring) to the user.

90.

Claim 8 of the '951 Patent, for example, recites:

> *8. The system of claim 1, wherein the computer program code further*
> *comprises: instructions to compare the first data and/or the second data*
> *with reference data; and instructions to detect an event in an environment*
> *associated with the WCD based upon the comparison.*

The telematics system compares accelerometer data in timed sets, and when the user is driving the

system enters into a driving monitoring mode where hard braking, fast acceleration, and sharp

cornering will be detected, based on the comparison on the first and second (and other) data sets.

91.

Claim 9 of the '951 Patent, for example, recites:

> *9. The system of claim 8, wherein the comparison is in the time domain, frequency domain, or both.*

The telematics system monitors accelerometer and gyroscope *x*, *y* and *z* axis data by processing the information in the time domain, frequency domain or both.

92.

Independent Claim 10 of the '951 Patent, shown in italics, recites:

> *10. A wireless communications device (WCD), comprising: one or more memories that store computer program code; and one or more processors that execute the computer program code, the computer program code comprising:*

The telematics system uses wireless communication tracker devices equipped with a processor and memory that executes program code for determining human activities, including safe and unsafe driving vbehavior, by monitoring acceleration sensor data over time periods from the internal accelerometer sensor and/or gyroscope sensor.

> *instructions to produce data from one or more sensors associated with the WCD; instructions to determine a human body physical activity (HBPA) associated with a WCD user based upon the data;*

On information and belief, the telematics system, when powered up, starts getting data from the accelerometer and/or gyroscope sensor(s); it enters an investigation process to determine if the vehicle is being driven based on the data.

> *instructions to select a mode of operation from a set of modes, based upon the determined HBPA, the set including different modes of operation involving initiation of different investigation processes that capture different types of data; and*

When the telematics system determines that a person is driving the vehicle it starts monitoring the user's driving behavior to determine unsafe events such as sharp cornering, fast acceleration, and hard braking.

> *instructions to communicate the data to a remote computer system.*

On information and belief, the telematics system communicates the driver's information to remotely located computers/servers that determine driver scores.

COUNT IV

DIRECT INFRINGEMENT OF THE '914 PATENT

93.

Plaintiff incorporates by reference the allegations of Paragraphs 1-15.

94.

Defendant has directly infringed and continues to directly infringe at least one or more claims of the '914 Patent, through, among other activities, making, using, and incorporating into Defendant's telematics system automatic programs for monitoring human activities while driving.

Independent Claim 5 of the '914 Patent, shown in italics, recites:

> *5. A system comprising: at least one computing device; and at least one application executable in the at least one computing device, the application comprising:*

The telematics system uses wireless communication tracker devices for determining human activities including driving aggressively/dangerously, making sharp/fast turns, braking hard, et cetera, by monitoring internal accelerometer x, y, and z axis sensor data over time periods. The telematics system monitors three streams of data ("the x, y, and z axis") from each device. The telematics system software monitors the accelerometer sensor for linear acceleration and the gyroscope sensor for angular velocity to determine human activities.

> *logic that determines a user activity and/or user surroundings;*

The telematics system uses accelerometer reference data as values, time-series (samples), and/or frequencies. The telematics system monitors the accelerometer sensor for linear acceleration and/or the gyroscope sensor for angular velocity to determine human activities.

> *logic that determines a surveillance mode that corresponds to the user activity and/or the user surroundings;*

On information and belief, the telematics system uses logic for determining a surveillance mode that activates and corresponds to a vehicle in motion. When the system determines driving, it starts a driving surveillance mode to closely monitor driving behaviors. If the system determines an accident has occurred, it enters a surveillance mode for determining if the user responds to a countdown alarm.

> *logic that facilitates a user-defined response to the user activity and/or the user surroundings; and*

On information and belief, the telematics system facilitates a user-defined response when driving is detected. If an accident has occurred, the system enters a surveillance mode to capture data and provide emergency alerts to fleet operators, unless the user responds by turning off the event.

> *logic that communicates surveillance information to at least one remotely located computer device.*

On information and belief, the telematics system communicates surveillance information (driver habits, fast acceleration, hard braking, fast cornering) over a time period to remotely located computers that log driving events. The system communicates surveillance information of an accident to remote servers where assistance is activated.

Claim 6 of the '914 Patent, for example, recites:

> *6. The system of claim 5, wherein the logic that facilitates the user-defined response further comprises logic that automatically activates the user-defined response to the user activity and/or the user surroundings.*

The telematics system monitors the accelerometer and/or gyroscope sensors to automatically determine when a user is in a vehicle and driving.

95.

Claim 7 of the '914 Patent, for example, recites:

45

7. The system of claim 5, wherein the logic that facilitates the user-defined response further comprises logic that assigns a risk level associated with the user activity and/or the user surroundings.

The telematics system uses a surveillance mode that calculates the risk level of having an accident. Fast cornering while driving is measured by the accelerometer and gyroscope sensors. Risky driving behaviors are provided to the user and to remotely located servers.

96.

Claim 13 of the '914 Patent, for example, recites:

13. The system of claim 5, further comprising logic that provides the user an instruction according to the surveillance mode.

On information and belief, the telematics system provides the users with tips and other instructions to becoming a better driver.

97.

Independent Claim 15 of the '914 Patent, shown in italics, recites:

15. A method comprising the steps of: determining, by a computing device, a user activity and/or user surroundings;

The telematics system uses applications running on wireless communication tracker devices for automatically detecting driving behaviors.

determining, by the computing device, a surveillance mode that corresponds to the user activity and/or the user surroundings;

On information and belief, the telematics system uses logic for determining a surveillance mode that activates and corresponds to a vehicle in motion. When the system determines driving, it starts a driving surveillance mode to closely monitor driving behaviors. If the system determines an accident has occurred, it enters a surveillance mode for determining if the user responds to a countdown alarm.

facilitating, by the computing device, a user-defined response to the user activity and/or the user surroundings; and

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On information and belief, the telematics system facilitates a user-defined response when driving is detected. If an accident has occurred, the system enters a surveillance mode to capture data and provide emergency alerts to fleet operators, unless the user responds by turning off the event.

> *communicating, by the computing device, surveillance information to at least one remotely located computer device.*

On information and belief, the telematics system communicates surveillance information (driver habits, fast acceleration, hard braking, fast cornering) over a time period to remotely located computers that log driving events. The system communicates surveillance information of an accident to remote servers where assistance is activated.

98.

Claim 17 of the '914 Patent, for example, recites:

> *17. The method of claim 15, wherein the step of facilitating the user-defined response further comprises the step of assigning, by the computing device, a risk level associated with the user activity and/or the user surroundings.*

The telematics system uses a surveillance mode that calculates the risk level of having an accident. Fast cornering while driving is measured by the accelerometer and gyroscope sensors. Risky driving behaviors are provided to the user and to remotely located servers.

COUNT V

DIRECT INFRINGEMENT OF THE '273 PATENT

99.

Plaintiff incorporates by reference the allegations of Paragraphs 1-15.

100.

Defendant has directly infringed and continues to directly infringe at least one or more claims of the '273 Patent, through, among other activities, making, using, and incorporating into Defendant's telematics system automatic programs for monitoring human activities while driving.

47

101.

Independent Claim 1 of the '273 Patent, shown in italics, recites:

> *1. A method, comprising: receiving a time value and three streams of data sample values from an accelerometer of a wireless communication device (WCD) that is transported by a mobile thing (MT), each data sample value indicative of an acceleration of the WCD along an axis of a three dimensional (3D) coordinate system at a corresponding time value;*

The telematics system uses wireless communication tracker devices equipped with accelerometer and gyroscope sensors for monitoring three streams of data ("the *x*, *y*, and *z* axis") from each device. The telematics system software monitors the accelerometer sensor for linear acceleration and the gyroscope sensor for angular velocity to determine motion activities such as hard braking, fast acceleration, et cetera.

> *recognizing a particular set of data sample values as a reference in the 3D coordinate system for defining a relationship between an orientation of the WCD and a two dimensional (2D) coordinate system;*

The telematics system calculates accelerometer *x*, *y* and *z* axis data that totals the constant gravity acceleration. The acceleration from gravity may be removed by reducing the amount from each axis or the total amount when combining all three axes. Determining the vertical direction of gravity provides an orientation of the tracker device in a two-dimensional measurement system.

> *computing reference data based upon the recognition of the particular set, the reference data defining a relationship between each set of subsequent non-reference data sample values and the particular reference set of data sample values in the 2D coordinate system;*

On information and belief, the telematics system computes reference data including a numeric magnitude and frequency over a predetermined time period. Raw accelerometer data that represent the acceleration of the motion activity are compared by measuring the magnitude and frequency over the same predetermined time period as the reference data.

> *calculating movement data in the 2D coordinate system of one or more other non-reference data sample values based upon the reference data; and*

48

On information and belief, the telematics system calculates the movement data in a two-dimensional magnitude and frequency measurement over time.

> *determining a moving thing motion activity (MTMA) associated with the MT based upon the movement data.*

On information and belief, the telematics system determines the motion activity by matching the numeric numbers representing the magnitude and frequency over the same time period with reference data that matches the motion activity—safe/unsafe styles of driving (hard braking/fast acceleration/quick cornering)—based on the data.

102.

Claim 2 of the '273 Patent, for example, recites:

> *2. The method of claim 1, further comprising: prior to recognizing, mathematically combining the data sample values of the particular reference set; and recognizing the particular reference set as the reference when a combined value has a magnitude that is indicative of a relationship to Earth gravity.*

The telematics system calculates the accelerometer x, y and z axis data by adding the accelerometer axis data to locate the acceleration provided by gravity; the reference set is a measurement so the magnitude of gravity may be removed so acceleration associated with tracker movements may be accurately measured.

103.

Claim 3 of the '273 Patent, for example, recites:

> *3. The method of claim 2, further comprising updating the reference data each time the reference set of data samples is recognized.*

The telematics system updates the gravity reference data so acceleration from the movement of the tracker may be accurately measured.

104.

Claim 4 of the '273 Patent, for example, recites:

> *4. The method of claim 1, wherein: each set of data sample values includes a vector defined by three data sample values x,y,z; the reference data is a rotation matrix M; and the movement data comprises a vertical magnitude along the z axis and a horizontal magnitude along the x, y plane, both derived from a rotated vector, the rotated vector equal to the rotation matrix M multiplied by the vector associated with the other non-reference data sample values x,y,z.*

The telematics system uses the accelerometer *x*, *y* and *z* axis to determine the direction of gravity.

After determining the vertical direction of gravity (z axis) a horizontal magnitude for the *x* and *y* axis is established. The telematics system uses the *x* and *y* axis for determining hard braking, fast acceleration and quick cornering. The rotation matrix is applied to the raw *x*, *y* and *z* axis data from the accelerometer.

105.

Claim 5 of the '273 Patent, for example, recites:

> *5. The method of claim 4, further comprising: transforming the movement data to the frequency domain (FD) to produce FD data; computing one or more FD statistical metrics from the FD data; and wherein the MTMA identifying is based at least in part upon the FD statistical metrics.*

On information and belief, the telematics system transforms the movement data (from the accelerometer *x*, *y* and *z* axis) to the frequency domain to produce data that determines magnitude averages, amounts, and other statistical metrics used in identifying the motion activity.

106.

Claim 6 of the '273 Patent, for example, recites:

> *6. The method of claim 5, wherein the MTMA is identified from a set of MTMAs and further comprising: computing a score for each MTMA of the set; and comparing the scores to identify the MTMA.*

On information and belief, the telematics system uses a list of reference motion activities, each having a unique numeric score to be used for matching.

107.

Claim 7 of the '273 Patent, for example, recites:

> *7. The method of claim 1, wherein the MTMA is identified from a set of MTMAs and further comprising: computing a score for each MTMA of the set; and comparing the scores to identify the MTMA.*

On information and belief, the telematics system uses a list of reference motion activities, each

having a unique numeric score that can be matched with accelerometer data coming from motion

activities.

108.

Claim 8 of the '273 Patent, for example, recites:

> *8. The method of claim 1, wherein the reference data is in the form of a rotation matrix that normalizes the sets of non-reference data sample values with respect to Earth gravity.*

The telematics system uses reference data that includes or subtracts the earth's gravity acceleration

of the *x*, *y* and *z* axis or a combined total.

109.

Claim 9 of the '273 Patent, for example, recites:

> *9. The method of claim 1, wherein the movement data is in the time domain (TD) and wherein the computing comprises: computing a magnitude of the movement data in each of the two dimensions of space; computing one or more TD statistical metrics from the magnitudes; and wherein the MTMA determining is based at least in part upon the TD statistical metrics.*

On information and belief, the telematics system takes the accelerometer and/or gyroscope

movement data in the time domain and computes a magnitude of the movement data within a two-

dimensional vertical measurement for identifying the motion activity.

110.

Claim 10 of the '273 Patent, for example, recites:

> *10. The method of claim 9, further comprising: transforming the magnitudes from the TD to the frequency domain (FD) to produce FD data; computing one or more FD statistical metrics from the FD data; and wherein the MTMA determining is based at least in part the FD statistical metrics.*

On information and belief, the telematics system calculates the magnitudes in the frequency domain, so the motion activity is at least in part identified by the statistical metrics from the frequency domain.

111.

Claim 11 of the '273 Patent, for example, recites:

> *11. The method of claim 1, wherein one or more of the steps of the method is implemented in the WCD.*

The telematics system implements one or more steps of the method in the wireless communication tracker device.

112.

Independent Claim 12 of the '273 Patent, shown in italics, recites:

> *12. A method, comprising: receiving first and second data from an accelerometer associated with a wireless communication device (WCD) transported by a mobile thing (MT), the first and second data indicative of acceleration of the WCD;*

The telematics system uses wireless communication devices for determining motion activities including sharp/fast turns, hard braking, and excessive acceleration by monitoring accelerometer sensor data over time periods from the internal accelerometer sensor.

Claim 12 continues:

> *determining reference data that defines a reference framework in two dimensions (2D) of space from the first data;*

The telematics system uses reference data that determines peaks (and up and down) (2D) inertia motions by the accelerometer. The telematics system calculates reference data by monitoring the accelerometer x, y and z axis data to identify gravity data within the x, y and z axis. The gravity

data is also used to determine the vertical position (z axis) of the data so that measurements associated with vertical and horizontal movements (forward acceleration, braking, sharp cornering, and others) may be accurately measured.

> *normalizing the second data with the reference data so that the second data can be analyzed in the 2D space; and*

In response to receiving live data, the data is sampled by time, ranges, and/or averages, which is using a 2D analysis. Second data is normalized by removing the gravity acceleration. The second data is normalized by determining a rotational matrix that is based on the direction of gravity.

> *identifying a mobile thing motion activity (MTMA) associated with the MT based upon the normalized second data.*

The telematics system identifies motion activity based on normalizing the data to remove gravity's acceleration so movement acceleration may be accurately measured. The second data measurements also determine the acceleration in a vertical and horizontal plane and/or direction so that forward acceleration, braking, sharp cornering, and other events may be determined.

113.

Claim 13 of the '273 Patent, for example, recites:

> *13. The method of claim 12, wherein the second data comprises a plurality of periodic samples.*

On information and belief, the telematics system verifies motion activities by determining when second data samples match the previous data sample to formulate matching pattern. A motion activity gets confirmed when two or more data samples match a motion activity.

114.

Claim 14 of the '273 Patent, for example, recites:

> *14. The method of claim 12, wherein the reference data is indicative of a relationship to Earth gravity.*

The telematics system determines Earth's gravity to determine the vertical (z axis) position. The vertical position also allows the x and y axis to be representative of the horizontal data (e.g. accelerating, braking, cornering).

115.

Claim 15 of the '273 Patent, for example, recites:

> *15. The method of claim 12, wherein the reference data is determined in the form of vector information indicative of a relation to Earth gravity by comparing the first data to a predefined numerical range.*

The telematics system uses the accelerometer data to determine a vertical position (and also horizontal position) by monitoring the acceleration of Earth's gravity, then a numerical range for vertical data and comparing the first data to a predetermined numerical range for determining driver acceleration, breaking, and sharp turns/cornering.

116.

Claim 16 of the '273 Patent, for example, recites:

> *16. The method of claim 15, wherein the accelerometer produces first, second, and third sample data along each of 3 axes in a three dimensional (3D) coordinate system and wherein the first data pertains to a value that equals one within a predefined range, the value computed by combining the first, second, and third sample data.*

The telematics system verifies motion activities by determining when second data samples match the previous data sample to formulate matching pattern. A motion activity gets confirmed when two or more data samples match a motion activity.

117.

Claim 18 of the '273 Patent, for example, recites:

> *18. The method of claim 17, further comprising: transforming the magnitudes from the TD to the frequency domain (FD) to produce FD data; computing one or more FD statistical metrics from the FD data; and wherein the MTMA identifying is based at least in part the FD statistical metrics.*

On information and belief, the telematics system transforms the movement data (from the accelerometer x, y and z axis) to the frequency domain to produce data that determines magnitude averages, amounts, and other statistical metrics used in identifying the motion activity.

118.

Claim 19 of the '273 Patent, for example, recites:

> *19. The method of claim 18, wherein the MTMA is identified from a known plurality of MTMAs and further comprising: computing a score for each MTMA of the known plurality; and comparing the scores to identify the MTMA.*

The telematics system determines when a user is driving and accelerates too fast and/or brakes too hard or aggressively corners by assigning a number (score) that identifies motion activity types (for example, acceptable or unsafe).

119.

Claim 20 of the '273 Patent, for example, recites:

> *20. The method of claim 12, wherein one or more of the steps of the method is implemented in the WCD.*

The telematics system implements one or more steps of the method in the wireless communication tracker device.

120.

Claim 21 of the '273 Patent, for example, recites:

> *21. The method of claim 12, further comprising: determining an MTMA based action to be initiated based upon the identified MTMA; and initiating an MTMA based action.*

On information and belief, when the telematics system program determines the user is driving unsafely (MTMA), the system will then send captured surveillance information (location, time, driver ID, g-force, and speed) to assist the user in improving driving skills (action associated with the MTMA).

121.

Independent Claim 22 of the '273 Patent, shown in italics, recites:

> *22. A method, comprising: receiving a time value and three streams of data sample values from an accelerometer of a wireless communication device (WCD) that is transported by a mobile thing (MT), each data sample value indicative of an acceleration of the WCD along an axis of a three dimensional (3D) coordinate system at a corresponding time value;*

The telematics system uses wireless communication tracker devices for determining motion activities of a mobile thing by sampling data over time periods along three orthogonal axes of an internal accelerometer.

Claim 22 continues:

> *computing reference data, the reference data defining a relationship between data sample values and a reference framework to enable comparison of 3D sets of data sample values;*

The telematics system uses reference data that when matched with live accelerometer data will determine driving vehicles, hard braking, fast acceleration and others, by comparison of 3D sets of sample values.

> *calculating movement data for each set based upon the reference data; and*

In response to receiving live data, the data is sampled by time, peaks, ranges, and/or averages.

> *determining a moving thing motion activity (MTMA) associated with the MT based upon the movement data.*

By comparing the reference data with live accelerometer data that is normalized (by determining peaks, frequencies, timing, et cetera), the motion activity is determined, logged, and provided for driver scores and rewards.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for relief that the Court enter judgment in their favor and against the Defendant, granting the following relief:

That the Court enter judgment that one or more claims of the '846 Patent have been infringed either literally and/or under the doctrine of equivalents, by Defendant;

That the Court enter judgment that one or more claims of the '558 Patent have been infringed either literally and/or under the doctrine of equivalents, by Defendant;

That the Court enter judgment that one or more claims of the'951 Patent have been infringed either literally and/or under the doctrine of equivalents, by Defendant;

That the Court enter judgment that one or more claims of the '914 Patent have been infringed either literally and/or under the doctrine of equivalents, by Defendant;

That the Court enter judgment that one or more claims of the '273 Patent have been infringed either literally and/or under the doctrine of equivalents, by Defendant;

That Defendant be ordered to pay damages adequate to compensate Plaintiff for its acts of infringement, pursuant to 35 U.S.C. § 284;

That Plaintiff be awarded increased damages under 35 U.S.C. § 284 due to Defendant's willful infringement of the '846, '558,'951, '914, and '273 Patents;

That the Court find that this case is exceptional and award Plaintiff reasonable attorneys' fees pursuant to 35 U.S.C. § 285;

That Defendant, its officers, agents, employees, and those acting in privity with it, be preliminarily enjoined from further infringement, contributory infringement, and/or inducing infringement of the patents-in-suit, pursuant to 35 U.S.C. § 283;

That Defendant, its officers, agents, employees, and those acting in privity with it, be permanently enjoined from further infringement, contributory infringement, and/or inducing infringement of the patents-in-suit, pursuant to 35 U.S.C. § 283;

That Defendant be ordered to pay prejudgment and post-judgment interest;

That Defendant be ordered to pay all costs associated with this action; and

That Plaintiff be granted such other and additional relief as the Court deems just, equitable, and proper.

DEMAND FOR JURY TRIAL

Pursuant to Fed. R. Civ. P. 38(b), Plaintiff demands a jury trial on all issues justiciable by a jury.

Respectfully Submitted,

Dated: August 2, 2024   /s/ Brett Thomas Cooke

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